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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,297	09/22/2000	Eric R. Lovegren	R11.12-0701	1706

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EXAMINER	
WEST, JEFFREY R	

ART UNIT	PAPER NUMBER
2857	

DATE MAILED: 03/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/667,297	LOVEGREN ET AL.	
	Examiner	Art Unit	
	Jeffrey R. West	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-20,25,26,29,31,32,34,35,37,39 and 43-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-20,25,26,29,31,32,34,35,37,39 and 43-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 25, 2005, has been entered.

Claim Objections

3. Claims 17 and 25 are objected to because of the following informalities:

In claim 17, lines 6-7, to avoid confusion, "pulse having a transmit pulse amplitude using" should be --- pulse, having a transmit pulse amplitude, using---.

In claim 25, line 2, to avoid problems of antecedent basis, "first threshold" should be ---first threshold value---.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 17-19, 26, 29, 32, 35, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,626,038 to Carsella et al. (incorporating by reference U.S. Patent No. 5,609,059 to McEwan) in view of U.S. Patent No. 5,134,377 to Reddy, III et al.

MPEP §2163.07(b) [R-3]: Incorporation by Reference: Instead of repeating some information contained in another document, an application may attempt to incorporate the content of another document or part thereof by reference to the document in the text of the specification. The information incorporated is as much a part of the application as filed as if the text was repeated in the application, and should be treated as part of the text of the application as filed.

Carsella discloses a radar level transmitter for providing level detection of

materials in a container (Carsella; column 2, lines 48-57), the transmitter comprising an antenna (McEwan; column 6, lines 12-16), a transceiver coupled to the antenna (McEwan; column 6, lines 12-16) and configured to transmit a microwave (i.e., 200ps = 5 GHz) (McEwan; column 8, lines 40-41) pulse having a transmit pulse amplitude using the antenna and produce a signal representing reflected wave pulses (McEwan; column 6, lines 22-25), a microprocessor system coupled to the transceiver and adapted to control the transceiver and process the signal (McEwan; column 6, lines 57-59 and column 9, lines 45-47), and a level calculation module executable by the microprocessor system and adapted to establish a level of a first material interface using the signal and a threshold (McEwan; column 8, line 66 to column 9, line 3 and column 9, lines 32-47).

Carsella also discloses the microprocessor is adapted to receive, from an operator, information related to properties of the materials (i.e. dielectrics) (Carsella; column 5, lines 30-37) and that the amplitude of the reflected pulses are corrected by gain based on the properties of the materials (Carsella; column 4, lines 43-48).

Carsella discloses that the information related to properties of the materials comprises dielectric parameters having a value corresponding to a dielectric of a first material adjacent to the antenna and a second dielectric parameter having a value corresponding to a dielectric of a second material located below the first material (Carsella; column 1, lines 25-34 and column 8, lines 1-5).

Carsella discloses including an input/output port adapted to transmit a level output that is indicative of the first material interface (McEwan; column 9, lines 32-

47).

Carsella further discloses that a first material interface is formed between first and second materials (McEwan; column 6, lines 16-18).

Carsella also discloses a second material interface located between second and third materials, the third material below the second material, and the method including detecting a second reflected wave pulse corresponding to a portion of the transmitted microwave pulse reflected from the second material interface (McEwan; column 6, lines 60-67 and column 7, lines 62-65).

Carsella also discloses that a fiducial interface is formed between an antenna (McEwan; column 6, lines 12-14) and the first material and the method including detecting a fiducial pulse, corresponding to a portion of the transmitted microwave pulse reflected from the fiducial interface (McEwan; column 6, lines 43-53).

As noted above, the invention of Carsella teaches many of the features of the claimed invention and while Carsella does teach including detection thresholds for detecting reflections at the first, second, and fiducial interfaces (McEwan; column 8, line 66 to column 9, line 3), Carsella does not specifically include the means for setting the detection thresholds.

Reddy discloses a method for use by a level transmitter to detect a reflected pulse of a transmitted pulse (column 1, lines 45-54) from a first material interface (column 3, lines 52-56), the method comprising calculating a threshold as a function of a reference amplitude of the transmitted microwave pulse and the amplitude of the reflected pulse (column 1, line 64 to column 2, line 2 and column 9, lines 6-20)

and detecting the reflected pulse from the first material interface using the threshold (column 1, lines 51-54), wherein the threshold calculation is performed using a microprocessor system (column 3, line 66 to column 4, line 6, column 5, lines 21-23, and column 9, lines 6-20).

It would have been obvious to one having ordinary skill in the art to modify the invention of Carsella to specify include the means for setting the detection thresholds, as taught by Reddy, because the combination would have provided an improved means for setting the thresholds of Carsella that, as suggested by Reddy, would have provided proper pulse détection without the detection of extraneous noise by employing a threshold specifically adapted to the particular conditions being measured (column 1, line 64 to column 2, line 2 and column 8, line 63 to column 9, line 5).

Further since the invention of Carsella discloses that the amplitude of the reflected pulses are corrected by gain based on the information related to the properties of the materials (i.e. dielectrics) (Carsella; column 4, lines 43-48) and the invention of Reddy teaches calculating a threshold as a function of a reference amplitude of the transmitted microwave pulse and the amplitude of the reflected pulse (column 1, line 64 to column 2, line 2 and column 9, lines 6-20), the combination would have calculated the threshold as a function of the transmit pulse amplitude and the information related to the properties of the materials.

Further still, since the invention of Carsella specifically discloses employing thresholds for detecting reflections at the first, second, and fiducial interfaces

(McEwan; column 8, line 66 to column 9, line 3) and Reddy suggests employing thresholds specifically adapted to the particular conditions being measured, the combination would have employed a specific threshold for detecting each of the reflections at the first, second, and fiducial interfaces.

6. Claims 25, 31, 34, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carsella in view of Reddy, III et al. and further in view of U.S. Patent No. 6,087,977 to Rost.

As noted above, the invention of Carsella and Reddy teaches many of the features of the claimed invention and while the invention of Carsella and Reddy does teach preventing attenuation error in the reflected pulse measurement (McEwan; column 5, lines 15-21), the combination does not specifically teach calculating the estimated pulse/threshold value as a function of a correction/attenuation factor.

Rost teaches false alarm rate and detection probability in a receiver comprising a receiver for receiving radar signals (column 1, lines 11-21) using a threshold level that is calculated in accordance with a corrective attenuation factor (column 2, lines 51-58).

It would have been obvious to one having ordinary skill in the art to modify the invention of Carsella and Reddy to specifically include calculating the estimated pulse/threshold value as a function of a correction/attenuation factor, as taught by Rost, because, as suggested by Rost, the combination would have improved the probability of detecting the signals and increased the accuracy of the detection by

accounting for degradations of the signal caused by reflections at a range far from the transceiver (column 2, lines 22-25 and column 6, lines 22-49).

7. Claims 20, 37, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carsella in view of Reddy, III et al. and further in view of U.S. Patent No. 3,812,422 to De Carolis.

As noted above, the invention of Carsella and Reddy teaches many of the features of the claimed invention and while the invention of Carsella and Reddy teaches setting dielectric constants of the materials which are provided in order to determine material interface thresholds, the combination teaches inputting the dielectric constants by an operator rather than by a dielectric constant calculator.

De Carolis teaches an apparatus for measuring the levels of fluids and the dielectric constants of the same comprising a dielectric constant calculator (i.e. measuring instrument) (Figure 2) determining the dielectric constant of the second material (i.e. material other than air) as a ratio of the amplitude of the transmit pulse and the amplitude of the reflected pulse (column 1, lines 30-32 and column 5, lines 29-36).

It would have been obvious to one having ordinary skill in the art to modify the invention of Carsella and Reddy to include a dielectric constant calculator for calculating the dielectric constants of the materials, as taught by De Carolis, because the combination of Carsella and Reddy requires that the dielectric constants of the materials be set by a user and De Carolis suggests a combination

that would have provided means for automatically determining the dielectric constants, thereby reducing the burden on the user (column 1, lines 30-32 and column 5, lines 29-36).

With respect to claims 37 and 45, since the invention of Carsella and Reddy determines the thresholds based on the dielectric constants of the fluids and further specifically indicates that the dielectric constant of the fluids vary with temperature (Carsella, column 5, lines 5-6) and the invention of De Carolis teaches a method for automatically determining the current dielectric constants of the fluids for determining the thresholds, it is considered inherent that the determined thresholds are also a function of temperature.

8. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carsella in view of Reddy, III et al. and further in view of U.S. Patent No. 5,672,975 to Kielb et al.

As noted above, the invention of Carsella and Reddy teaches many of the features of the claimed invention, and while the invention of Carsella and Reddy does teach the radar transmitter with a keypad for entering information related to properties of the materials received from an operator (i.e. dielectric constants) (Carsella; column 5, lines 30-37) connected as part of a process control loop (Carsella; column 3, lines 19-28) for connection to remote devices (Carsella; column 9, lines 8-11), the combination does not explicitly indicate that the information is received over the process control loop.

Kielb teaches a two-wire level transmitter for sensing the level of liquids in a tank (column 1, lines 40-58) connected over a process control loop (column 2, lines 10-13) wherein commands are set to the transmitter from a control room over the process control loop (column 4, lines 49-58).

It would have been obvious to one having ordinary skill in the art to modify the invention of Carsella and Reddy to explicitly indicate that the information is received over the process control loop, as taught by Kielb, because the invention of Carsella and Reddy does implement a process control loop for remote communication and, as suggested by Kielb, the combination would have reduced the burden of the user by not requiring the user to be local to the tank being monitored but instead allowing the user to input information and/or commands, such as the information related to properties of the materials received from an operator in Carsella and Reddy, from a remote location (column 4, lines 20-32 and 49-58).

Response to Arguments

9. Applicant's arguments with respect to claims 17-20, 25, 26, 29, 31, 32, 34, 35, 37, 39, and 43-45 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U.S. Patent No. 5,943,908 to Innes et al. teaches a probe for sensing a fluid level comprising means for performing time-domain reflectometery (column 3, lines 26-31) by setting a dielectric of a first material and a second material, below the first material, forming a gas/liquid or liquid/liquid interface (column 3, lines 32-52), and using these known dielectric parameters in calculating the detected pulse amplitude to account for pulse amplitude variations (column 3, lines 55-62).

U.S. Patent No. 5,457,990 to Oswald et al. discloses a method for use by a level transmitter to detect a reflection of a transmitted pulse from a first material interface, the method comprising calculating an estimated first reflected pulse amplitude as a function of a reference amplitude of the transmitted pulse (column 9, lines 31-53 and column 10, lines 49-53) and detecting the reflected pulse from the first material interface using the estimated first reflected pulse amplitude by calculating a first threshold value as a function of the estimated first reflected pulse amplitude (column 10, lines 53-58) using a transceiver apparatus for transmitting a pulse having a transmit amplitude and receiving the pulses to produce a signal representing the reflected wave pulses as part of a controlling processor system (column 7, lines 16-30 and Figures 5, 9, and 10).

Oswald discloses a level calculation module executable by the processor system that establishes a level of the first material interface using the signal and the threshold value (column 4, lines 43-56 and column 8, lines 57-47) and outputs this level through a port to a display means (column 7, lines 28-30).

Oswald discloses detecting multiple pulses (column 6, lines 54-58) wherein a first reflected pulse corresponds to the portion of a transmitted pulse reflected at a first material interface between air and a first product (i.e. first and second materials), a second reflected pulse corresponding to the portion of a transmitted pulse reflected at a first material interface between the first product and a second product (i.e. second and third materials), and a fiducial pulse corresponding to the portion of a transmitted pulse reflected at the fiducial interface at the top of the tank (column 4, lines 12-16 and column 7, lines 7-9).

U.S. Patent No. 5,969,666 to Burger et al. teaches a radar-based method of measuring the level of a material in a containing comprising a transmitter antenna that generates microwave pulses (column 2, lines 3-23).

U.S. Patent No. 6,111,547 to Gau et al. teaches a modularized multiple-feed electromagnetic signal receiving apparatus including means for microwave signals to be converted to an intermediate frequency suitable for propagation in transmission cables.

U.S. Patent No. 5,438,867 to van der Pol teaches a process for measuring the level of fluid in a tank according to the radar principle.

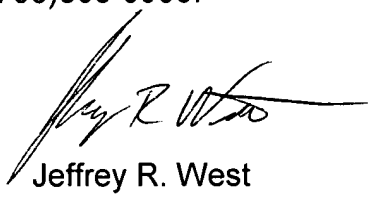
http://hyperphysics.phy-astr.gsu.edu/hbase/ems2.html, "Electromagnetic Spectrum" teaches that microwaves are in the range of 1.6-30 GHz.

11. Any inquiry concerning this communication or earlier communications

from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday thru Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.



Jeffrey R. West
Examiner – 2857

March 6, 2006